

# OCR A Level

Computer  
Science

H446 – Paper 1

5

## Defining and updating tables using SQL

Unit 4

Exchanging data



PG ONLINE

# Objectives

- Be able to use SQL to define a database table
- Be able to use SQL to update, insert and delete data from multiple tables of a relational database

# Creating a new table using SQL

- SQL may be used to define and create a new table
- Here is an example:

```
CREATE TABLE tblProduct  
(  
    ProductID CHAR(4) NOT NULL, PRIMARY KEY,  
    Description VARCHAR(20) NOT NULL,  
    Price CURRENCY  
)
```

- Notice how the primary key is defined
  - Two of the fields in this example cannot be left blank when data is added to the table

# Common data types

Data type	Description	Example
<b>CHAR(n)</b>	Char string of fixed length n	ProductCode CHAR(6)
<b>VARCHAR(n)</b>	Character string variable length, max. n	Surname VARCHAR(25)
<b>BOOLEAN</b>	TRUE or FALSE	ReviewComplete BOOLEAN
<b>INTEGER, INT</b>	Integer	Quantity INTEGER
<b>FLOAT</b>	Number with a floating decimal point	Length FLOAT (10,2) (maximum number of digits is 10 with max. 2 after decimal point)
<b>DATE</b>	Stores Day, Month, Year values	HireDate DATE
<b>TIME</b>	Stores Hour, Minute, Second	RaceTime TIME
<b>CURRENCY</b>	Formats numbers in the currency used in your region	EntryFee CURRENCY





# Altering a table structure

- The ALTER TABLE statement is used to add, delete or modify columns in an existing table
- To add a new column:

```
ALTER TABLE tblProduct  
    ADD QtyInStock INTEGER
```

# Delete or alter a table structure:

- To delete a column:

```
ALTER TABLE tblProduct  
    DROP QtyInStock
```

- To change the data type of a column:

```
ALTER TABLE tblProduct  
    MODIFY COLUMN Description VARCHAR (30) NOT NULL
```

# Defining linked tables

- In this example we will create three linked tables



Product (ProductID, Description, Price)

ProductComponent (ProductID, CompID, Quantity)

Component (CompID, CompDesc, Cost)

- The ProductComponent table is defined as shown:

```
CREATE TABLE ProductComponent
( ProductID  CHAR(4) NOT NULL,
  CompID  CHAR(6) NOT NULL,
  Quantity INTEGER
```

```
FOREIGN KEY      ProductID REFERENCES Product(ProductID)
```

```
FOREIGN KEY      CompID REFERENCES Component(CompID)
```



# Worksheet 5

- Do **Tasks 1 and 2** on the worksheet





# Inserting data using SQL

- The **INSERT INTO** statement is used to insert a new record into a table, for example the Product table, which is defined as shown below:

```
ProductID CHAR(4) NOT NULL, PRIMARY KEY  
Description VARCHAR(20) NOT NULL  
Price CURRENCY
```

- Insert a new record for ID A345, “Pink rabbit”, £7.50:

```
INSERT INTO Product (ProductID, Description, Price)  
VALUES (“A345”, “Pink Rabbit”, 7.50)
```

- Note that you do not need to specify the field names in the top line if data is being added to

# Updating data using SQL

- The **UPDATE** statement is used to update a record in a table, for example the Product table:

```
ProductID CHAR(4) NOT NULL, PRIMARY KEY  
Description VARCHAR(20) NOT NULL  
Price CURRENCY
```

- To update record for product ID A345, changing the description to “Blue Rabbit” and the price to £8.25:

```
UPDATE Product  
SET Description = “Blue Rabbit”, Price = 8.25  
WHERE ProductID = “A345”
```

# Deleting a record using SQL

- The **DELETE** statement is used to delete a record in a table, for example the Product table:

```
ProductID CHAR(4) NOT NULL, PRIMARY KEY  
Description VARCHAR(20) NOT NULL  
Price CURRENCY
```

- To delete record for product ID A345:

```
DELETE FROM Product  
WHERE ProductID = "A345"
```

# Worksheet 5

- Do **Task 3** on the worksheet



# Plenary

- You need to be able to :
- write SQL statements to **CREATE, ALTER, INSERT INTO, UPDATE, DELETE** database tables and records



## Copyright

© 2016 PG Online Limited

The contents of this unit are protected by copyright.

This unit and all the worksheets, PowerPoint presentations, teaching guides and other associated files distributed with it are supplied to you by PG Online Limited under licence and may be used and copied by you only in accordance with the terms of the licence. Except as expressly permitted by the licence, no part of the materials distributed with this unit may be used, reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic or otherwise, without the prior written permission of PG Online Limited.

## Licence agreement

This is a legal agreement between you, the end user, and PG Online Limited. This unit and all the worksheets, PowerPoint presentations, teaching guides and other associated files distributed with it is licensed, not sold, to you by PG Online Limited for use under the terms of the licence.

The materials distributed with this unit may be freely copied and used by members of a single institution on a single site only. You are not permitted to share in any way any of the materials or part of the materials with any third party, including users on another site or individuals who are members of a separate institution. You acknowledge that the materials must remain with you, the licencing institution, and no part of the materials may be transferred to another institution. You also agree not to procure, authorise, encourage, facilitate or enable any third party to reproduce these materials in whole or in part without the prior permission of PG Online Limited.